

CLAIMS

1. Ultralow carbon thin gauge steel sheet excellent in surface conditions, formability, and workability comprised of, by mass%,  $0.0003\% \leq C \leq 0.003\%$ , Si  $\leq 0.01\%$ , Mn  $\leq 0.1\%$ , P  $\leq 0.02\%$ , S  $\leq 0.01\%$ ,  $0.0005\% \leq N \leq 0.0025\%$ ,  $0.01\% \leq \text{acid soluble Ti} \leq 0.07\%$ , acid soluble Al  $\leq 0.003\%$ , and  $0.002\% \leq \text{La} + \text{Ce} + \text{Nd} \leq 0.02\%$  and a balance of iron and unavoidable impurities, said steel sheet characterized by containing at least cerium oxysulfite, lanthanum oxysulfite, and neodymium oxysulfite.

2. Ultralow carbon thin gauge steel sheet excellent in surface conditions, formability, and workability comprised of, by mass%,  $0.0003\% \leq C \leq 0.003\%$ , Si  $\leq 0.01\%$ , Mn  $\leq 0.1\%$ , P  $\leq 0.02\%$ , S  $\leq 0.01\%$ ,  $0.0005\% \leq N \leq 0.0025\%$ ,  $0.01\% \leq \text{acid soluble Ti} \leq 0.07\%$ , acid soluble Al  $\leq 0.003\%$ , and  $0.002\% \leq \text{La} + \text{Ce} + \text{Nd} \leq 0.02\%$  and a balance of iron and unavoidable impurities, said steel sheet characterized in that an average grain size of recrystallized grains is 15  $\mu\text{m}$  or more and an average value of an aspect ratio of the recrystallized grain size is 2.0 or less.

3. Ultralow carbon thin gauge steel sheet excellent in surface conditions, formability, and workability as set forth in claim 1 or 2, characterized in that said thin gauge steel sheet further contains, by mass%,  $0.0004\% \leq \text{Nb} \leq 0.05\%$ .

4. Ultralow carbon thin gauge steel sheet excellent in surface conditions, formability, and workability as set forth in any one of claims 1 to 3, characterized in that said thin gauge steel sheet further contains, by mass%,  $0.0004\% \leq B \leq 0.005\%$ .

5. A method for producing ultralow carbon thin gauge steel sheet excellent in surface conditions, formability, and workability comprising casting molten steel comprised of, by mass%,  $0.0003\% \leq C \leq 0.003\%$ , Si  $\leq 0.01\%$ , Mn  $\leq 0.1\%$ , P  $\leq 0.02\%$ , S  $\leq 0.01\%$ ,  $0.0005\% \leq N \leq 0.0025\%$ ,  $0.01\% \leq \text{acid}$

soluble  $Ti \leq 0.07\%$ , acid soluble  $Al \leq 0.003\%$ , and  
0.002% $\leq La+Ce+Nd \leq 0.02\%$  and a balance of iron and  
unavoidable impurities, heating the obtained cast slab,  
hot rolling and coiling it to obtain a hot rolled steel  
5 strip, cold rolling it by a cold rolling rate of 70% or  
more, then continuously annealing it during which  
recrystallization annealing it at 600 to 900°C.

6. A method for producing ultralow carbon thin  
gauge steel sheet excellent in surface conditions,  
10 formability, and workability as set forth in claim 5,  
characterized in that said molten steel further contains,  
by mass%, 0.0004% $\leq Nb \leq 0.05\%$ .

7. A method for producing ultralow carbon thin  
gauge steel sheet excellent in surface conditions,  
15 formability, and workability as set forth in claim 5 or 6  
characterized in that said molten steel further contains,  
by mass%, 0.0004% $\leq B \leq 0.005\%$ .